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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/826,160	ZENG ET AL.	
	Examiner	Art Unit	
	Aaron Sanders	2168	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 July 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-54* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-54* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 June 2007* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/12/2006 and 02/08/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Applicant's amendment to the specification and abstract filed 27 July 2007 has been entered. Applicant's amendment to the drawings filed 4 June 2007 has been entered. Applicant's amendment to the claims filed 2 April 2007 has been entered. Claims 1-54 are pending in this action. This action has been made FINAL.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the data structure of claims 29-30 must be shown or the features canceled from the claims. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application

remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claims 9, 23, 39, and 50 provide for the use of a "troubleshooting wizard", i.e. it "allows a user to systematically present and leverage...", but, since the claims do not set forth any active steps involved in the method/process, it is unclear what method/process Applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced. More specifically, the claim limitation "allows" a user to use the "troubleshooting wizard" rather than requiring that the user use the "troubleshooting wizard". Thus, the step itself is optional.

Claim Rejections - 35 USC § 112 First Paragraph

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 23-30 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contains subject matter

which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Specifically, the specification does not mention "tangible" media.

Claim Rejections - 35 USC § 112 Second Paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 9, 23, 39, and 50 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "leverage" in the limitation "allows a user to systematically present and leverage" in claims 9, 23, 39, and 50 is a relative term which render the claims indefinite. The term "leverage" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 23-30 and 50-54 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

As per claims 23-30, according to the instant specification (see paragraph [0053]), the computer-readable media includes carrier waves. As such, the instant claims are non-statutory.

As per claims 50-54, the instant claims are directed to software *per se*. Independent claim 50 recites a computer program *per se* and functional descriptive material consisting of data structures and computer programs, which impart functionality when employed as a computer component. As such, the instant claims are not limited to statutory subject matter and are therefore non-statutory. See Diehr, 450 U.S. at 185-86, 209 USPQ at 8.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 29-30 and 50-54 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. 6,711,585 (hereinafter Copperman).

As per claims 29-30 and 50-54, Copperman teaches:

29. A tangible computer-readable medium comprising a structured answer object data structure for use in product problem analysis and diagnosis, the structured answer object data structure comprising *(See e.g. col. 1, lines 14-18, "a system and method for generating and utilizing knowledge containers for the orderly storage and retrieval of information")*:

a product problem description data field *(See e.g. Fig. 2 where, see col. 6, line 63 – col. 7, line 31, "Marked content 70 is a textual representation of the contents of the knowledge container or a description or representation of the resource")*;

a product problem cause data field *(See e.g. Fig. 2 where, see col. 6, lines 46-62, "Context tags or taxonomy tags 60 represent a multidimensional classification of the knowledge container against a knowledge map")*;

a product problem resolution data field *(See e.g. Fig. 2 where, see col. 7, lines 39-48, "Knowledge containers also include typed links 90 to other related knowledge containers. These links 90 can indicate part/whole relationships (e.g., a 'question' knowledge container and an 'answer' knowledge container are each part of a previously asked question (PAQ) knowledge container)")*; and

wherein the product problem description data field is a parent node of the product problem cause data field *(See e.g. Fig. 2, where the "marked content 70" determines which "taxonomy tags 60" the "knowledge container" should have)*, and the product problem cause data field is a parent node of the product problem resolution data field *(See e.g. Fig. 2, where "taxonomy tags 60" indicate which other "knowledge containers" to link to based on context)*.

30. The computer-readable medium of claim 29, wherein the structured answer object data structure further comprises a product problem symptom data field, the product problem description field being a parent node of the product problem symptom data field *(See e.g. Fig. 2 where "symptom" could be a "Taxonomy Tag" or "Marked Content").*

50. A computer device comprising:

means for communicating a search request to a server computing device *(See e.g. col. 30, line 66 – col. 31, line 22, "In operation, the user (or the application screen) first specifies a query, in natural language")*, the means allowing a user to systematically present and leverage *(See e.g. Fig. 21 where, see col. 38, lines 22-45, "As shown in FIG. 21, users may similarly be asked to indicate which knowledge map regions are relevant")* hierarchically structured historical product problem diagnosis data from structured answer data objects *(See e.g. col. 7, lines 39-48, "Knowledge containers also include typed links 90 to other related knowledge containers. These links 90 can indicate part/whole relationships (e.g., a 'question' knowledge container and an 'answer' knowledge container are each part of a previously asked question (PAQ) knowledge container)... Links 90 have type and direction" where the claimed "hierarchy" is formed by the referenced directed "links" and the claimed "historical procuct problem diagnosis data" is the referenced "previously asked question" and "answer")* in view of a product problem description, the search request comprising the product problem description *(See e.g. col. 10, line 37 – col. 12, line 2, "The distance between the 'Surfboard' concept node in 'Vehicles' and the 'Miles-per-gallon' concept node in 'Efficiency' would be large. This distance could be used by the system to discount documents tagged to 'Surfboard' in*

response to the query 'How many miles-per-gallon should I expect to get out of my pick-up if I have it loaded down with surfboards?'"); and

responsive to receiving a response to the search request, means for presenting information from the response to the user *(See e.g. col. 31, lines 23-41, "Query-based Retrieval includes five stages... The final result of executing these five stages is a single ordered list of knowledge containers", and col. 2, lines 13-31, "the documents are first transformed from clear text into a structured record (knowledge container)")*, the information comprising the hierarchically structured historic problem diagnosis data *(See e.g. col. 7, lines 39-48, "Knowledge containers also include typed links 90 to other related knowledge containers. These links 90 can indicate part/whole relationships (e.g., a 'question' knowledge container and an 'answer' knowledge container are each part of a previously asked question (PAQ) knowledge container)... Links 90 have type and direction")*, the historic problem diagnosis data being associated with term(s) and/or phrase(s) related to the product problem description *(See e.g. col. 10, line 37 – col. 12, line 2, "suppose the system has identified the 'Trucks' node in the taxonomy above as being related to a user's query, perhaps because the word 'truck' was in the query. Documents tagged to 'Trucks' are likely to be relevant").*

51. The computing device of claim 50, wherein the historic problem diagnosis data comprise any one or more of hierarchically structured product problem description(s), symptom(s), cause(s), and resolution(s) *(See e.g. claim 22, "an association of a knowledge instance with a node of said diagnostic taxonomy indicates*

that at least some content of the knowledge instance describes a method to address that symptom").

52. The computing device of claim 50, wherein the information comprises a link to a product support article *(See e.g. col. 7, lines 32-38, "The knowledge container 20 additionally contains the original electronic form of the original content 80 (perhaps a Microsoft Word document, a PDF file, an HTML page, a pointer to such content in an external repository, or a combination of the above). This allows the knowledge container 20 to be displayed to the end user in its complete and original form if desired").*

53. The computing device of claim 50, wherein the information comprises a set of structured answer objects *(See e.g. Figs. 1 and 2, and col. 7, lines 39-48, "Knowledge containers also include typed links 90 to other related knowledge containers. These links 90 can indicate part/whole relationships (e.g., a 'question' knowledge container and an 'answer' knowledge container are each part of a previously asked question (PAQ) knowledge container)").*

54. The computing device of claim 53, wherein respective ones of the structured answer objects were clustered by the server as corresponding to one-another, the clustering being based on reinforced clustering operations *(See e.g. Fig. 13 which depicts reinforced clustering, Fig. 16, and col. 2, lines 13-31, "The system then clusters documents for each taxonomy in accordance with the weights ascribed to the terms in the taxonomy's list").*

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-28 and 31-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. 6,711,585 (hereinafter Copperman), in view of U.S. 2005/0055321 (hereinafter Fratkina).

1. A computer-implemented method comprising:

converting, by a computing device, unstructured service requests to one or more structured answer objects *(See e.g. Copperman col. 30, line 66 – col. 31, line 22, "In operation, the user (or the application screen) first specifies a query, in natural language", Copperman col. 31, lines 23-41, "Query-based Retrieval includes five stages... The final result of executing these five stages is a single ordered list of knowledge containers", and Copperman col. 2, lines 13-31, "the documents are first transformed from clear text into a structured record (knowledge container)" where the claimed "converting" is the referenced "five stages", the claimed "unstructured service request" is the referenced "query, in natural language", and the claimed "structured answer objects" are the referenced "knowledge containers")*, each unstructured service request including information to narrow product problem symptom(s) to a root cause *(Copperman does not teach narrowing symptoms to a cause. However, Fratkina does, see Fig. 18 where, see [0389] "FIG. 18 is a flowchart depicting the steps performed by*

dialog engine 232 as it resolves a user query" where, see [0234], "consider a diagnostic dialog case where one taxonomy's concepts indicate symptoms a user is experiencing and a 2nd taxonomy indicates product vendors. One concept-node within the symptoms taxonomy is 'printing problems', and it has a number of children and grandchildren that indicate more specific kinds of printing problems". Thus, it would have been obvious to one of ordinary skill in the database art at the time of the invention to combine the teachings of the cited references because Fratkina's teachings would have allowed Copperman's method to gain easier access to relevant information in large knowledge bases, see Fratkina [0008]), each structured answer object comprising hierarchically structured historic problem diagnosis data *(See e.g. Copperman col. 7, lines 39-48, "Knowledge containers also include typed links 90 to other related knowledge containers. These links 90 can indicate part/whole relationships (e.g., a 'question' knowledge container and an 'answer' knowledge container are each part of a previously asked question (PAQ) knowledge container)... Links 90 have type and direction" where the claimed "hierarchy" is formed by the referenced directed "links" and the claimed "historic problem diagnosis data" is the referenced "previously asked question" and "answer")*; and

in view of the product problem symptom(s):

identifying a set of the one or more structured answer data objects, each structured answer data object in the set comprising term(s) and/or phrase(s) related to the product problem symptom(s) *(See e.g. Copperman col. 10, line 37 – col. 12, line 2, "suppose the system has identified the 'Trucks' node in the*

taxonomy above as being related to a user's query, perhaps because the word 'truck' was in the query. Documents tagged to 'Trucks' are likely to be relevant" where the claimed "set" is the referenced "Documents tagged to 'Trucks' and the referenced "Documents" are contained in "knowledge containers", see Copperman col. 2, lines 13-31, "the documents are first transformed from clear text into a structured record (knowledge container)"); and

providing historic and hierarchically structured problem diagnosis data from the set to an end-user for product problem diagnosis *(See e.g. Copperman col. 7, lines 39-48, "Knowledge containers also include typed links 90 to other related knowledge containers. These links 90 can indicate part/whole relationships (e.g., a 'question' knowledge container and an 'answer' knowledge container are each part of a previously asked question (PAQ) knowledge container)... Links 90 have type and direction" and Copperman col. 30, line 66 – col. 31, line 22, "Query-based Retrieval includes five stages... The final result of executing these five stages is a single ordered list of knowledge containers" where the claimed "providing" is the referenced "final result").*

2. The method of claim 1, and wherein the problem diagnosis data comprise any one or more of a product problem description, symptom, cause, and resolution *(See e.g. Copperman claim 22, "an association of a knowledge instance with a node of said diagnostic taxonomy indicates that at least some content of the knowledge instance describes a method to address that symptom").*

3. The method of claim 1, and wherein the problem diagnosis data comprise a link to a product support article *(See e.g. Copperman col. 7, lines 32-38, "The knowledge container 20 additionally contains the original electronic form of the original content 80 (perhaps a Microsoft Word document, a PDF file, an HTML page, a pointer to such content in an external repository, or a combination of the above). This allows the knowledge container 20 to be displayed to the end user in its complete and original form if desired").*

4. The method of claim 1, and wherein converting the unstructured service requests, identifying the set, and providing the historic and hierarchically structured problem diagnosis data are performed by a server computing device *(See e.g. Copperman col. 4, line 65 – col. 5, line 4, "The operating environment in which the present invention is used encompasses general distributed computing systems wherein general purpose computers, work stations, or personal computers are connected via communication links of various types")*, and wherein the method further comprises:

receiving, from a client computing device, the product problem description *(See e.g. Copperman col. 2, lines 32-59, "The present invention may then be used to aid a researcher or user in quickly identifying relevant documents, in response to an inputted query")*; and

wherein providing the historic and hierarchically structured problem diagnosis data further comprises:

searching an index for terms and/or phrases that match term(s) in the product problem description to identify the one or more structured answer objects in the set *(See*

e.g. Copperman col. 2, lines 13-31, "the documents are first transformed from clear text into a structured record (knowledge container) automatically constructed indexes (tags) to help identify when the structured record is an appropriate response to a particular query");

communicating the set to the client computing device for display by a troubleshooting wizard to the end-user *(See e.g. Copperman col. 7, lines 49-67, "Summary Views are typically used when displaying a list of possible knowledge containers (for example, knowledge containers retrieved by a query) in order to guide the user's selection of a particular knowledge container").*

5. The method of claim 1, wherein the method further comprises dynamically generating a knowledge base article from information provided by the set *(See e.g. Copperman col. 7, lines 49-67, "In general, knowledge containers are displayed in one of three ways, with many possible variations of each: (1) Summary View... (2) Full View... and (3) Original View...").*

6. The method of claim 1, wherein after converting the unstructured service requests and before identifying the set and providing the historic and hierarchically structured problem diagnosis data, the method further comprises:

generating an index by:

extracting features from the structured answer objects *(See e.g. Copperman col. 2, lines 13-31, "An automatic term extractor creates a list of terms that are indicative of the subject matter contained in the documents")*;

analyzing the features to identify the terms and the phrases *(See e.g. Copperman col. 2, lines 13-31, "A term analysis system assigns the relevant terms to one or more taxonomies")*;

assigning relevance weight to the terms and the phrases *(See e.g. Copperman col. 2, lines 13-31, "a suitable algorithm is then used to determine the relatedness (weight) between each list of terms and its associated taxonomy")*;

normalizing terminology within the terms and the phrases *(See e.g. Copperman Fig. 2 where, see col. 12, lines 38-61, "taxonomy tags 40 and marked content 70 are added by autocontextualization. The purpose of autocontextualization is to provide a mechanism for transforming a document (e.g., a document created by a word processor, or an e-mail) into a structured record and to automatically (without human review) construct indexes usable by a content-based retrieval engine to help identify when the structured record is an appropriate response to a particular query")*; and

wherein operations for identifying the set are based on information in the index *(See e.g. Copperman col. 2, lines 13-31, "the documents are first transformed from clear text into a structured record (knowledge container) automatically constructed indexes (tags) to help identify when the structured record is an appropriate response to a particular query")*.

7. The method of claim 6, wherein after converting the unstructured service requests and before identifying the set and providing the historic and hierarchically structured problem diagnosis data, the method further comprises:

clustering respective ones of the structured answer objects based on the index to group related structured answer objects *(See e.g. Copperman col. 2, lines 13-31, "The system then clusters documents for each taxonomy in accordance with the weights ascribed to the terms in the taxonomy's list")*; and

wherein providing the set, the set comprises a reinforced cluster of structured answer objects *(See e.g. Copperman Fig. 13 which depicts reinforced clustering and Copperman Fig. 16).*

8. The method of claim 7, wherein clustering comprises reinforced *(See e.g. Copperman Fig. 13 which depicts reinforced clustering as clusters with similar vocabulary and Copperman Fig. 16)* and unified clustering operations *(See e.g. Copperman Fig. 2 which depicts a Knowledge Container which contains heterogeneous data and Copperman Fig. 13 which depicts clustering the Knowledge Containers).*

9. A method at least partially implemented by a computing device comprising:

communicating, by a troubleshooting wizard, a search request to a server computing device *(Copperman does not teach a troubleshooting wizard. However, Fratkina does, see Fig. 18 where, see [0389] "FIG. 18 is a flowchart depicting the steps performed by dialog engine 232 as it resolves a user query" where, see [0234], "consider a diagnostic dialog case where one taxonomy's concepts indicate symptoms a user is experiencing and a 2nd taxonomy indicates product vendors. One concept-node within the symptoms taxonomy is 'printing problems', and it has a number of children and grandchildren that indicate more specific kinds of printing problems". Thus, it would have been obvious to one of ordinary skill in the database art at the time of the*

invention to combine the teachings of the cited references because Fratkina's teachings would have allowed Copperman's method to gain easier access to relevant information in large knowledge bases, see Fratkina [0008]), the troubleshooting wizard allows a user to systematically present and leverage *(See e.g. Copperman Fig. 21 where, see col. 38, lines 22-45, "As shown in FIG. 21, users may similarly be asked to indicate which knowledge map regions are relevant")* hierarchically structured historical product problem diagnosis data from structured answer data objects *(See e.g. Copperman col. 7, lines 39-48, "Knowledge containers also include typed links 90 to other related knowledge containers. These links 90 can indicate part/whole relationships (e.g., a 'question' knowledge container and an 'answer' knowledge container are each part of a previously asked question (PAQ) knowledge container)... Links 90 have type and direction" where the claimed "hierarchy" is formed by the referenced directed "links" and the claimed "historical procuct problem diagnosis data" is the referenced "previously asked question" and "answer")* in view of a product problem description, the search request comprising the product problem description *(See e.g. Copperman col. 10, line 37 – col. 12, line 2, "The distance between the 'Surfboard' concept node in 'Vehicles' and the 'Miles-per-gallon' concept node in 'Efficiency' would be large. This distance could be used by the system to discount documents tagged to 'Surfboard' in response to the query 'How many miles-per-gallon should I expect to get out of my pick-up if I have it loaded down with surfboards?'")*;

responsive to receiving a response to the search request, presenting, by the troubleshooting wizard, information from the response to the user *(See e.g. Copperman*

col. 31, lines 23-41, "Query-based Retrieval includes five stages... The final result of executing these five stages is a single ordered list of knowledge containers", and Copperman col. 2, lines 13-31, "the documents are first transformed from clear text into a structured record (knowledge container)"); and

wherein the information comprises the hierarchically structured historic problem diagnosis data *(See e.g. Copperman col. 7, lines 39-48, "Knowledge containers also include typed links 90 to other related knowledge containers. These links 90 can indicate part/whole relationships (e.g., a 'question' knowledge container and an 'answer' knowledge container are each part of a previously asked question (PAQ) knowledge container)... Links 90 have type and direction")*, the historic problem diagnosis data being associated with term(s) and/or phrase(s) related to the product problem description *(See e.g. Copperman col. 10, line 37 – col. 12, line 2, "suppose the system has identified the 'Trucks' node in the taxonomy above as being related to a user's query, perhaps because the word 'truck' was in the query. Documents tagged to 'Trucks' are likely to be relevant")*.

10. The method of claim 9, wherein the historic problem diagnosis data comprise any one or more of hierarchically structured product problem description(s), symptom(s), cause(s), and resolution(s) *(See e.g. Copperman claim 22, "an association of a knowledge instance with a node of said diagnostic taxonomy indicates that at least some content of the knowledge instance describes a method to address that symptom")*.

11. The method of claim 9, wherein the information comprises a link to a product support article *(See e.g. Copperman col. 7, lines 32-38, "The knowledge container 20*

additionally contains the original electronic form of the original content 80 (perhaps a Microsoft Word document, a PDF file, an HTML page, a pointer to such content in an external repository, or a combination of the above). This allows the knowledge container 20 to be displayed to the end user in its complete and original form if desired").

12. The method of claim 9, wherein the information comprises a set of structured answer objects *(See e.g. Copperman Figs. 1 and 2, and col. 7, lines 39-48, "Knowledge containers also include typed links 90 to other related knowledge containers. These links 90 can indicate part/whole relationships (e.g., a 'question' knowledge container and an 'answer' knowledge container are each part of a previously asked question (PAQ) knowledge container)").*

13. The method of claim 12, wherein respective ones of the structured answer objects were clustered by the server as corresponding to one-another, the clustering being based on reinforced clustering operations *(See e.g. Copperman Fig. 13 which depicts reinforced clustering, Fig. 16, and col. 2, lines 13-31, "The system then clusters documents for each taxonomy in accordance with the weights ascribed to the terms in the taxonomy's list").*

14. The method of claim 13, wherein the clustering is further based on unified clustering operations *(See e.g. Copperman Fig. 2 which depicts a Knowledge Container which contains heterogeneous data and Copperman Fig. 13 which depicts clustering the Knowledge Containers).*

15. A tangible computer-readable medium comprising computer-executable instructions for:

converting, by a computing device, unstructured service requests to one or more structured answer objects *(See e.g. Copperman col. 30, line 66 – col. 31, line 22, "In operation, the user (or the application screen) first specifies a query, in natural language", Copperman col. 31, lines 23-41, "Query-based Retrieval includes five stages... The final result of executing these five stages is a single ordered list of knowledge containers", and Copperman col. 2, lines 13-31, "the documents are first transformed from clear text into a structured record (knowledge container)" where the claimed "converting" is the referenced "five stages", the claimed "unstructured service request" is the referenced "query, in natural language", and the claimed "structured answer objects" are the referenced "knowledge containers")*, each unstructured service request including information to narrow product problem symptom(s) to a root cause *(Copperman does not teach narrowing symptoms to a cause. However, Fratkina does, see Fig. 18 where, see [0389] "FIG. 18 is a flowchart depicting the steps performed by dialog engine 232 as it resolves a user query" where, see [0234], "consider a diagnostic dialog case where one taxonomy's concepts indicate symptoms a user is experiencing and a 2nd taxonomy indicates product vendors. One concept-node within the symptoms taxonomy is 'printing problems', and it has a number of children and grandchildren that indicate more specific kinds of printing problems". Thus, it would have been obvious to one of ordinary skill in the database art at the time of the invention to combine the teachings of the cited references because Fratkina's teachings would have allowed Copperman's method to gain easier access to relevant information in large knowledge bases, see Fratkina [0008])*, each structured answer object comprising hierarchically

structured historic problem diagnosis data *(See e.g. Copperman col. 7, lines 39-48, "Knowledge containers also include typed links 90 to other related knowledge containers. These links 90 can indicate part/whole relationships (e.g., a 'question' knowledge container and an 'answer' knowledge container are each part of a previously asked question (PAQ) knowledge container)... Links 90 have type and direction" where the claimed "hierarchy" is formed by the referenced directed "links" and the claimed "historic problem diagnosis data" is the referenced "previously asked question" and "answer")*; and

in view of the product problem symptom(s):

identifying a set of the one or more structured answer data objects, each structured answer data object in the set comprising term(s) and/or phrase(s) related to the product problem symptom(s) *(See e.g. Copperman col. 10, line 37 – col. 12, line 2, "suppose the system has identified the 'Trucks' node in the taxonomy above as being related to a user's query, perhaps because the word 'truck' was in the query. Documents tagged to 'Trucks' are likely to be relevant" where the claimed "set" is the referenced "Documents tagged to 'Trucks' and the referenced "Documents" are contained in "knowledge containers", see Copperman col. 2, lines 13-31, "the documents are first transformed from clear text into a structured record (knowledge container)")*; and

providing historic and hierarchically structured problem diagnosis data from the set to an end-user for product problem diagnosis *(See e.g. Copperman col. 7, lines 39-48, "Knowledge containers also include typed links 90 to other*

related knowledge containers. These links 90 can indicate part/whole relationships (e.g., a 'question' knowledge container and an 'answer' knowledge container are each part of a previously asked question (PAQ) knowledge container)... Links 90 have type and direction" and Copperman col. 30, line 66 – col. 31, line 22, "Query-based Retrieval includes five stages... The final result of executing these five stages is a single ordered list of knowledge containers" where the claimed "providing" is the referenced "final result").

16. The computer-readable medium of claim 15, and wherein the problem diagnosis data comprise any one or more of a product problem description, symptom, cause, and resolution *(See e.g. Copperman claim 22, "an association of a knowledge instance with a node of said diagnostic taxonomy indicates that at least some content of the knowledge instance describes a method to address that symptom").*

17. The computer-readable medium of claim 15, and wherein the problem diagnosis data comprise a link to a product support article *(See e.g. Copperman col. 7, lines 32-38, "The knowledge container 20 additionally contains the original electronic form of the original content 80 (perhaps a Microsoft Word document, a PDF file, an HTML page, a pointer to such content in an external repository, or a combination of the above). This allows the knowledge container 20 to be displayed to the end user in its complete and original form if desired").*

18. The computer-readable medium of claim 15, and wherein converting the unstructured service requests, identifying the set, and providing the historic and hierarchically structured problem diagnosis data are performed by a server computing

device *(See e.g. Copperman col. 4, line 65 – col. 5, line 4, "The operating environment in which the present invention is used encompasses general distributed computing systems wherein general purpose computers, work stations, or personal computers are connected via communication links of various types")*, and wherein the computer-executable instruction further comprise instructions for:

receiving, from a client computing device, the product problem description *(See e.g. Copperman col. 2, lines 32-59, "The present invention may then be used to aid a researcher or user in quickly identifying relevant documents, in response to an inputted query")*; and

wherein providing the historic and hierarchically structured problem diagnosis data further comprises:

searching an index for terms and/or phrases that match term(s) in the product problem description to identify the one or more structured answer objects in the set *(See e.g. Copperman col. 2, lines 13-31, "the documents are first transformed from clear text into a structured record (knowledge container) automatically constructed indexes (tags) to help identify when the structured record is an appropriate response to a particular query")*;

communicating the set to the client computing device for display by a troubleshooting wizard to the end-user *(See e.g. Copperman col. 7, lines 49-67, "Summary Views are typically used when displaying a list of possible knowledge containers (for example, knowledge containers retrieved by a query) in order to guide the user's selection of a particular knowledge container")*.

19. The computer-readable medium of claim 15, wherein the computer-executable instruction further comprise instructions for dynamically generating a knowledge base article from information provided by the set *(See e.g. Copperman col. 7, lines 49-67, "In general, knowledge containers are displayed in one of three ways, with many possible variations of each: (1) Summary View... (2) Full View... and (3) Original View...").*

20. The computer-readable medium of claim 15, wherein after converting the unstructured service requests and before identifying the set and providing the historic and hierarchically structured problem diagnosis data, the computer-executable instruction further comprise instructions for:

generating an index by:

extracting features from the structured answer objects *(See e.g. Copperman col. 2, lines 13-31, "An automatic term extractor creates a list of terms that are indicative of the subject matter contained in the documents")*;

analyzing the features to identify the terms and the phrases *(See e.g. Copperman col. 2, lines 13-31, "A term analysis system assigns the relevant terms to one or more taxonomies")*;

assigning relevance weight to the terms and the phrases *(See e.g. Copperman col. 2, lines 13-31, "a suitable algorithm is then used to determine the relatedness (weight) between each list of terms and its associated taxonomy")*;

normalizing terminology within the terms and the phrases *(See e.g. Copperman Fig. 2 where, see col. 12, lines 38-61, "taxonomy tags 40 and marked content 70 are added by autocontextualization. The purpose of*

autocontextualization is to provide a mechanism for transforming a document (e.g., a document created by a word processor, or an e-mail) into a structured record and to automatically (without human review) construct indexes usable by a content-based retrieval engine to help identify when the structured record is an appropriate response to a particular query"); and

wherein operations for identifying the set are based on information in the index *(See e.g. Copperman col. 2, lines 13-31, "the documents are first transformed from clear text into a structured record (knowledge container) automatically constructed indexes (tags) to help identify when the structured record is an appropriate response to a particular query").*

21. The computer-readable medium of claim 20, wherein after converting the unstructured service requests and before identifying the set and providing the historic and hierarchically structured problem diagnosis data, the computer-executable instruction further comprise instructions for:

clustering respective ones of the structured answer objects based on the index to group related structured answer objects *(See e.g. Copperman col. 2, lines 13-31, "The system then clusters documents for each taxonomy in accordance with the weights ascribed to the terms in the taxonomy's list")*; and

wherein providing the set, the set comprises a reinforced cluster of structured answer objects *(See e.g. Copperman Fig. 13 which depicts reinforced clustering and Copperman Fig. 16).*

22. The computer-readable medium of claim 21, wherein clustering comprises reinforced *(See e.g. Copperman Fig. 13 which depicts reinforced clustering as clusters with similar vocabulary and Copperman Fig. 16)* and unified clustering operations *(See e.g. Copperman Fig. 2 which depicts a Knowledge Container which contains heterogeneous data and Copperman Fig. 13 which depicts clustering the Knowledge Containers).*

23. A tangible computer-readable medium comprising computer-executable instructions for:

communicating, by a troubleshooting wizard, a search request to a server computing device *(Copperman does not teach a troubleshooting wizard. However, Fratkina does, see Fig. 18 where, see [0389] "FIG. 18 is a flowchart depicting the steps performed by dialog engine 232 as it resolves a user query" where, see [0234], "consider a diagnostic dialog case where one taxonomy's concepts indicate symptoms a user is experiencing and a 2nd taxonomy indicates product vendors. One concept-node within the symptoms taxonomy is 'printing problems', and it has a number of children and grandchildren that indicate more specific kinds of printing problems". Thus, it would have been obvious to one of ordinary skill in the database art at the time of the invention to combine the teachings of the cited references because Fratkina's teachings would have allowed Copperman's method to gain easier access to relevant information in large knowledge bases, see Fratkina [0008])*, the troubleshooting wizard allows a user to systematically present and leverage *(See e.g. Copperman Fig. 21 where, see col. 38, lines 22-45, "As shown in FIG. 21, users may similarly be asked to indicate which*

knowledge map regions are relevant") hierarchically structured historical product problem diagnosis data from structured answer data objects *(See e.g. Copperman col. 7, lines 39-48, "Knowledge containers also include typed links 90 to other related knowledge containers. These links 90 can indicate part/whole relationships (e.g., a 'question' knowledge container and an 'answer' knowledge container are each part of a previously asked question (PAQ) knowledge container)... Links 90 have type and direction" where the claimed "hierarchy" is formed by the referenced directed "links" and the claimed "historical procuct problem diagnosis data" is the referenced "previously asked question" and "answer")* in view of a product problem description, the search request comprising the product problem description *(See e.g. Copperman col. 10, line 37 – col. 12, line 2, "The distance between the 'Surfboard' concept node in 'Vehicles' and the 'Miles-per-gallon' concept node in 'Efficiency' would be large. This distance could be used by the system to discount documents tagged to 'Surfboard' in response to the query 'How many miles-per-gallon should I expect to get out of my pick-up if I have it loaded down with surfboards?'")*; and

responsive to receiving a response to the search request, presenting, by the troubleshooting wizard, information from the response to the user *(See e.g. Copperman col. 31, lines 23-41, "Query-based Retrieval includes five stages... The final result of executing these five stages is a single ordered list of knowledge containers", and Copperman col. 2, lines 13-31, "the documents are first transformed from clear text into a structured record (knowledge container)")*, the information comprising the hierarchically structured historic problem diagnosis data *(See e.g. Copperman col. 7,*

lines 39-48, "Knowledge containers also include typed links 90 to other related knowledge containers. These links 90 can indicate part/whole relationships (e.g., a 'question' knowledge container and an 'answer' knowledge container are each part of a previously asked question (PAQ) knowledge container)... Links 90 have type and direction"), the historic problem diagnosis data being associated with term(s) and/or phrase(s) related to the product problem description *(See e.g. Copperman col. 10, line 37 – col. 12, line 2, "suppose the system has identified the 'Trucks' node in the taxonomy above as being related to a user's query, perhaps because the word 'truck' was in the query. Documents tagged to 'Trucks' are likely to be relevant").*

24. The computer-readable medium of claim 23, wherein the historic problem diagnosis data comprise any one or more of hierarchically structured product problem description(s), symptom(s), cause(s), and resolution(s) *(See e.g. Copperman claim 22, "an association of a knowledge instance with a node of said diagnostic taxonomy indicates that at least some content of the knowledge instance describes a method to address that symptom").*

25. The computer-readable medium of claim 23, wherein the information comprises a link to a product support article *(See e.g. Copperman col. 7, lines 32-38, "The knowledge container 20 additionally contains the original electronic form of the original content 80 (perhaps a Microsoft Word document, a PDF file, an HTML page, a pointer to such content in an external repository, or a combination of the above). This allows the knowledge container 20 to be displayed to the end user in its complete and original form if desired").*

26. The computer-readable medium of claim 23, wherein the information comprises a set of structured answer objects *(See e.g. Copperman Figs. 1 and 2, and col. 7, lines 39-48, "Knowledge containers also include typed links 90 to other related knowledge containers. These links 90 can indicate part/whole relationships (e.g., a 'question' knowledge container and an 'answer' knowledge container are each part of a previously asked question (PAQ) knowledge container)").*

27. The computer-readable medium of claim 26, wherein respective ones of the structured answer objects were clustered by the server as corresponding to one-another, the clustering being based on reinforced clustering operations *(See e.g. Copperman Fig. 13 which depicts reinforced clustering, Fig. 16, and col. 2, lines 13-31, "The system then clusters documents for each taxonomy in accordance with the weights ascribed to the terms in the taxonomy's list").*

28. The computer-readable medium of claim 27, wherein the clustering is further based on unified clustering operations *(See e.g. Copperman Fig. 2 which depicts a Knowledge Container which contains heterogeneous data and Copperman Fig. 13 which depicts clustering the Knowledge Containers).*

31. A computing device comprising:

a processor *(See e.g. col. 4, lines 11-26, "including a central processing unit (CPU)")*; and

a memory coupled to the processor, the memory comprising computer-program instructions executable by the processor for *(See e.g. col. 4, lines 11-26, "memory storage devices for the CPU")*:

converting, by a computing device, unstructured service requests to one or more structured answer objects *(See e.g. Copperman col. 30, line 66 – col. 31, line 22, "In operation, the user (or the application screen) first specifies a query, in natural language", Copperman col. 31, lines 23-41, "Query-based Retrieval includes five stages... The final result of executing these five stages is a single ordered list of knowledge containers", and Copperman col. 2, lines 13-31, "the documents are first transformed from clear text into a structured record (knowledge container)" where the claimed "converting" is the referenced "five stages", the claimed "unstructured service request" is the referenced "query, in natural language", and the claimed "structured answer objects" are the referenced "knowledge containers")*, each unstructured service request including information to narrow product problem symptom(s) to a root cause *(Copperman does not teach narrowing symptoms to a cause. However, Fratkina does, see Fig. 18 where, see [0389] "FIG. 18 is a flowchart depicting the steps performed by dialog engine 232 as it resolves a user query" where, see [0234], "consider a diagnostic dialog case where one taxonomy's concepts indicate symptoms a user is experiencing and a 2nd taxonomy indicates product vendors. One concept-node within the symptoms taxonomy is 'printing problems', and it has a number of children and grandchildren that indicate more specific kinds of printing problems". Thus, it would have been obvious to one of ordinary skill in the database art at the time of the invention to combine the teachings of the cited references because Fratkina's teachings would have allowed Copperman's*

method to gain easier access to relevant information in large knowledge bases, see Fratkina [0008]), each structured answer object comprising hierarchically structured historic problem diagnosis data *(See e.g. Copperman col. 7, lines 39-48, "Knowledge containers also include typed links 90 to other related knowledge containers. These links 90 can indicate part/whole relationships (e.g., a 'question' knowledge container and an 'answer' knowledge container are each part of a previously asked question (PAQ) knowledge container)... Links 90 have type and direction" where the claimed "hierarchy" is formed by the referenced directed "links" and the claimed "historic problem diagnosis data" is the referenced "previously asked question" and "answer")*; and

in view of the product problem symptom(s):

identifying a set of the one or more structured answer data objects, each structured answer data object in the set comprising term(s) and/or phrase(s) related to the product problem symptom(s) *(See e.g. Copperman col. 10, line 37 – col. 12, line 2, "suppose the system has identified the 'Trucks' node in the taxonomy above as being related to a user's query, perhaps because the word 'truck' was in the query. Documents tagged to 'Trucks' are likely to be relevant" where the claimed "set" is the referenced "Documents tagged to 'Trucks' and the referenced "Documents" are contained in "knowledge containers", see Copperman col. 2, lines 13-31, "the documents are first transformed from clear text into a structured record (knowledge container)")*; and

providing historic and hierarchically structured problem diagnosis data from the set to an end-user for product problem diagnosis *(See e.g. Copperman col. 7, lines 39-48, "Knowledge containers also include typed links 90 to other related knowledge containers. These links 90 can indicate part/whole relationships (e.g., a 'question' knowledge container and an 'answer' knowledge container are each part of a previously asked question (PAQ) knowledge container)... Links 90 have type and direction" and Copperman col. 30, line 66 – col. 31, line 22, "Query-based Retrieval includes five stages... The final result of executing these five stages is a single ordered list of knowledge containers" where the claimed "providing" is the referenced "final result").*

32. The computing device of claim 31, and wherein the problem diagnosis data comprise any one or more of a product problem description, symptom, cause, and resolution *(See e.g. Copperman claim 22, "an association of a knowledge instance with a node of said diagnostic taxonomy indicates that at least some content of the knowledge instance describes a method to address that symptom").*

33. The computing device of claim 31, and wherein the problem diagnosis data comprise a link to a product support article *(See e.g. Copperman col. 7, lines 32-38, "The knowledge container 20 additionally contains the original electronic form of the original content 80 (perhaps a Microsoft Word document, a PDF file, an HTML page, a pointer to such content in an external repository, or a combination of the above). This allows the*

knowledge container 20 to be displayed to the end user in its complete and original form if desired").

34. The computing device of claim 31, and wherein converting the unstructured service requests, identifying the set, and providing the historic and hierarchically structured problem diagnosis data are performed by a server computing device *(See e.g. Copperman col. 4, line 65 – col. 5, line 4, "The operating environment in which the present invention is used encompasses general distributed computing systems wherein general purpose computers, work stations, or personal computers are connected via communication links of various types")*, and wherein the computer-executable instruction further comprise instructions for:

receiving, from a client computing device, the product problem description *(See e.g. Copperman col. 2, lines 32-59, "The present invention may then be used to aid a researcher or user in quickly identifying relevant documents, in response to an inputted query")*; and

wherein providing the historic and hierarchically structured problem diagnosis data further comprises:

searching an index for terms and/or phrases that match term(s) in the product problem description to identify the one or more structured answer objects in the set *(See e.g. Copperman col. 2, lines 13-31, "the documents are first transformed from clear text into a structured record (knowledge container) automatically constructed indexes (tags) to help identify when the structured record is an appropriate response to a particular query")*;

communicating the set to the client computing device for display by a troubleshooting wizard to the end-user *(See e.g. Copperman col. 7, lines 49-67, "Summary Views are typically used when displaying a list of possible knowledge containers (for example, knowledge containers retrieved by a query) in order to guide the user's selection of a particular knowledge container").*

35. The computing device of claim 31, wherein the method further comprises dynamically generating a knowledge base article from information provided by the set *(See e.g. Copperman col. 7, lines 49-67, "In general, knowledge containers are displayed in one of three ways, with many possible variations of each: (1) Summary View... (2) Full View... and (3) Original View...").*

36. The computing device of claim 31, wherein after converting the unstructured service requests and before identifying the set and providing the historic and hierarchically structured problem diagnosis data, the computer-executable instructions further comprise instructions for:

generating an index by:

extracting features from the structured answer objects *(See e.g. Copperman col. 2, lines 13-31, "An automatic term extractor creates a list of terms that are indicative of the subject matter contained in the documents")*;

analyzing the features to identify the terms and the phrases *(See e.g. Copperman col. 2, lines 13-31, "A term analysis system assigns the relevant terms to one or more taxonomies")*;

assigning relevance weight to the terms and the phrases *(See e.g. Copperman col. 2, lines 13-31, "a suitable algorithm is then used to determine the relatedness (weight) between each list of terms and its associated taxonomy")*;

normalizing terminology within the terms and the phrases *(See e.g. Copperman Fig. 2 where, see col. 12, lines 38-61, "taxonomy tags 40 and marked content 70 are added by autocontextualization. The purpose of autocontextualization is to provide a mechanism for transforming a document (e.g., a document created by a word processor, or an e-mail) into a structured record and to automatically (without human review) construct indexes usable by a content-based retrieval engine to help identify when the structured record is an appropriate response to a particular query")*; and

wherein operations for identifying the set are based on information in the index *(See e.g. Copperman col. 2, lines 13-31, "the documents are first transformed from clear text into a structured record (knowledge container) automatically constructed indexes (tags) to help identify when the structured record is an appropriate response to a particular query").*

37. The computing device of claim 36, wherein after converting the unstructured service requests and before identifying the set and providing the historic and hierarchically structured problem diagnosis data, the computer-executable instruction further comprise instructions for:

clustering respective ones of the structured answer objects based on the index to group related structured answer objects *(See e.g. Copperman col. 2, lines 13-31, "The*

system then clusters documents for each taxonomy in accordance with the weights ascribed to the terms in the taxonomy's list"); and

wherein providing the set, the set comprises a reinforced cluster of structured answer objects *(See e.g. Copperman Fig. 13 which depicts reinforced clustering and Copperman Fig. 16).*

38. The computing device of claim 37, wherein clustering comprises reinforced *(See e.g. Copperman Fig. 13 which depicts reinforced clustering as clusters with similar vocabulary and Copperman Fig. 16)* and unified clustering operations *(See e.g. Copperman Fig. 2 which depicts a Knowledge Container which contains heterogeneous data and Copperman Fig. 13 which depicts clustering the Knowledge Containers).*

39. A computing device comprising:

a processor *(See e.g. col. 4, lines 11-26, "including a central processing unit (CPU)")*; and

a memory coupled to the processor, the memory comprising computer-program instructions executable by the processor for *(See e.g. col. 4, lines 11-26, "memory storage devices for the CPU")*:

communicating, by a troubleshooting wizard, a search request to a server computing device *(Copperman does not teach a troubleshooting wizard. However, Fratkina does, see Fig. 18 where, see [0389] "FIG. 18 is a flowchart depicting the steps performed by dialog engine 232 as it resolves a user query" where, see [0234], "consider a diagnostic dialog case where one taxonomy's concepts indicate symptoms a user is experiencing and a 2nd taxonomy indicates*

product vendors. One concept-node within the symptoms taxonomy is 'printing problems', and it has a number of children and grandchildren that indicate more specific kinds of printing problems". Thus, it would have been obvious to one of ordinary skill in the database art at the time of the invention to combine the teachings of the cited references because Fratkina's teachings would have allowed Copperman's method to gain easier access to relevant information in large knowledge bases, see Fratkina [0008]), the troubleshooting wizard allows a user to systematically present and leverage *(See e.g. Copperman Fig. 21 where, see col. 38, lines 22-45, "As shown in FIG. 21, users may similarly be asked to indicate which knowledge map regions are relevant")* hierarchically structured historical product problem diagnosis data from structured answer data objects *(See e.g. Copperman col. 7, lines 39-48, "Knowledge containers also include typed links 90 to other related knowledge containers. These links 90 can indicate part/whole relationships (e.g., a 'question' knowledge container and an 'answer' knowledge container are each part of a previously asked question (PAQ) knowledge container)... Links 90 have type and direction" where the claimed "hierarchy" is formed by the referenced directed "links" and the claimed "historical procuct problem diagnosis data" is the referenced "previously asked question" and "answer")* in view of a product problem description, the search request comprising the product problem description *(See e.g. Copperman col. 10, line 37 – col. 12, line 2, "The distance between the 'Surfboard' concept node in 'Vehicles' and the 'Miles-per-gallon' concept node in 'Efficiency' would be large.*

This distance could be used by the system to discount documents tagged to 'Surfboard' in response to the query 'How many miles-per-gallon should I expect to get out of my pick-up if I have it loaded down with surfboards?'"); and

responsive to receiving a response to the search request, presenting, by the troubleshooting wizard, information from the response to the user *(See e.g. Copperman col. 31, lines 23-41, "Query-based Retrieval includes five stages... The final result of executing these five stages is a single ordered list of knowledge containers", and Copperman col. 2, lines 13-31, "the documents are first transformed from clear text into a structured record (knowledge container)")*, the information comprises the hierarchically structured historic problem diagnosis data *(See e.g. Copperman col. 7, lines 39-48, "Knowledge containers also include typed links 90 to other related knowledge containers. These links 90 can indicate part/whole relationships (e.g., a 'question' knowledge container and an 'answer' knowledge container are each part of a previously asked question (PAQ) knowledge container)... Links 90 have type and direction")*, the historic problem diagnosis data being associated with term(s) and/or phrase(s) related to the product problem description *(See e.g. Copperman col. 10, line 37 – col. 12, line 2, "suppose the system has identified the 'Trucks' node in the taxonomy above as being related to a user's query, perhaps because the word 'truck' was in the query. Documents tagged to 'Trucks' are likely to be relevant")*.

40. The computing device of claim 39, wherein the historic problem diagnosis data comprise any one or more of hierarchically structured product problem

description(s), symptom(s), cause(s), and resolution(s) *(See e.g. Copperman claim 22, "an association of a knowledge instance with a node of said diagnostic taxonomy indicates that at least some content of the knowledge instance describes a method to address that symptom").*

41. The computing device of claim 39, wherein the information comprises a link to a product support article *(See e.g. Copperman col. 7, lines 32-38, "The knowledge container 20 additionally contains the original electronic form of the original content 80 (perhaps a Microsoft Word document, a PDF file, an HTML page, a pointer to such content in an external repository, or a combination of the above). This allows the knowledge container 20 to be displayed to the end user in its complete and original form if desired").*

42. The computing device of claim 39, wherein the information comprises a set of structured answer objects *(See e.g. Copperman Figs. 1 and 2, and col. 7, lines 39-48, "Knowledge containers also include typed links 90 to other related knowledge containers. These links 90 can indicate part/whole relationships (e.g., a 'question' knowledge container and an 'answer' knowledge container are each part of a previously asked question (PAQ) knowledge container").*

43. The method of claim 42, wherein respective ones of the structured answer objects were clustered by the server as corresponding to one-another, the clustering being based on reinforced clustering operations *(See e.g. Copperman Fig. 13 which depicts reinforced clustering, Fig. 16, and col. 2, lines 13-31, "The system then clusters*

documents for each taxonomy in accordance with the weights ascribed to the terms in the taxonomy's list").

44. The method of claim 43, wherein the clustering is further based on unified clustering operations *(See e.g. Copperman Fig. 2 which depicts a Knowledge Container which contains heterogeneous data and Copperman Fig. 13 which depicts clustering the Knowledge Containers).*

45. A computing device comprising:

means for converting unstructured service requests to one or more structured answer objects *(See e.g. Copperman col. 30, line 66 – col. 31, line 22, "In operation, the user (or the application screen) first specifies a query, in natural language", Copperman col. 31, lines 23-41, "Query-based Retrieval includes five stages... The final result of executing these five stages is a single ordered list of knowledge containers", and Copperman col. 2, lines 13-31, "the documents are first transformed from clear text into a structured record (knowledge container)" where the claimed "converting" is the referenced "five stages", the claimed "unstructured service request" is the referenced "query, in natural language", and the claimed "structured answer objects" are the referenced "knowledge containers")*, each unstructured service request including information to narrow product problem symptom(s) to a root cause *(Copperman does not teach narrowing symptoms to a cause. However, Fratkina does, see Fig. 18 where, see [0389] "FIG. 18 is a flowchart depicting the steps performed by dialog engine 232 as it resolves a user query" where, see [0234], "consider a diagnostic dialog case where one taxonomy's concepts indicate symptoms a user is experiencing and a 2nd taxonomy*

indicates product vendors. One concept-node within the symptoms taxonomy is 'printing problems', and it has a number of children and grandchildren that indicate more specific kinds of printing problems". Thus, it would have been obvious to one of ordinary skill in the database art at the time of the invention to combine the teachings of the cited references because Fratkina's teachings would have allowed Copperman's method to gain easier access to relevant information in large knowledge bases, see Fratkina [0008]), each structured answer object comprising hierarchically structured historic problem diagnosis data *(See e.g. Copperman col. 7, lines 39-48, "Knowledge containers also include typed links 90 to other related knowledge containers. These links 90 can indicate part/whole relationships (e.g., a 'question' knowledge container and an 'answer' knowledge container are each part of a previously asked question (PAQ) knowledge container)... Links 90 have type and direction" where the claimed "hierarchy" is formed by the referenced directed "links" and the claimed "historic problem diagnosis data" is the referenced "previously asked question" and "answer")*; and

in view of the product problem symptom(s):

means for identifying a set of the one or more structured answer data objects, each structured answer data object in the set comprising term(s) and/or phrase(s) related to the product problem symptom(s) *(See e.g. Copperman col. 10, line 37 – col. 12, line 2, "suppose the system has identified the 'Trucks' node in the taxonomy above as being related to a user's query, perhaps because the word 'truck' was in the query. Documents tagged to 'Trucks' are likely to be relevant"*

where the claimed "set" is the referenced "Documents tagged to 'Trucks' and the referenced "Documents" are contained in "knowledge containers", see Copperman col. 2, lines 13-31, "the documents are first transformed from clear text into a structured record (knowledge container)"); and

means for providing historic and hierarchically structured problem diagnosis data from the set to an end-user for product problem diagnosis *(See e.g. Copperman col. 7, lines 39-48, "Knowledge containers also include typed links 90 to other related knowledge containers. These links 90 can indicate part/whole relationships (e.g., a 'question' knowledge container and an 'answer' knowledge container are each part of a previously asked question (PAQ) knowledge container)... Links 90 have type and direction" and Copperman col. 30, line 66 – col. 31, line 22, "Query-based Retrieval includes five stages... The final result of executing these five stages is a single ordered list of knowledge containers" where the claimed "providing" is the referenced "final result").*

46. The computing device of claim 45, and wherein the problem diagnosis data comprise any one or more of a product problem description, symptom, cause, and resolution *(See e.g. Copperman claim 22, "an association of a knowledge instance with a node of said diagnostic taxonomy indicates that at least some content of the knowledge instance describes a method to address that symptom").*

47. The computing device of claim 45, and wherein the problem diagnosis data comprise a link to a product support article *(See e.g. Copperman col. 7, lines 32-38, "The knowledge container 20 additionally contains the original electronic form of the original*

content 80 (perhaps a Microsoft Word document, a PDF file, an HTML page, a pointer to such content in an external repository, or a combination of the above). This allows the knowledge container 20 to be displayed to the end user in its complete and original form if desired").

48. The computing device of claim 45, and further comprising:

means for receiving, from a client computing device, the product problem description *(See e.g. Copperman col. 2, lines 32-59, "The present invention may then be used to aid a researcher or user in quickly identifying relevant documents, in response to an inputted query")*; and

wherein the means for providing the historic and hierarchically structured problem diagnosis data further comprises:

means for searching an index for terms and/or phrases that match term(s) in the product problem description to identify the one or more structured answer objects in the set *(See e.g. Copperman col. 2, lines 13-31, "the documents are first transformed from clear text into a structured record (knowledge container) automatically constructed indexes (tags) to help identify when the structured record is an appropriate response to a particular query")*; and

means for communicating the set to the client computing device for display by a troubleshooting wizard to the end-user *(See e.g. Copperman col. 7, lines 49-67, "Summary Views are typically used when displaying a list of possible knowledge containers (for example, knowledge containers retrieved by a query) in order to guide the user's selection of a particular knowledge container").*

49. The computing device of claim 45, further comprising means for dynamically generating a knowledge base article from information provided by the set *(See e.g. Copperman col. 7, lines 49-67, "In general, knowledge containers are displayed in one of three ways, with many possible variations of each: (1) Summary View... (2) Full View... and (3) Original View...").*

Response to Arguments

The remarks filed 2 April 2007 are responded to herein.

As per Applicant's arguments that the claims are statutory under 35 U.S.C. 101, the Examiner respectfully disagrees. First, system claims such as claims 50-54 that do not include hardware on non-statutory. Second, a "tangible" medium may be statutory if so defined in the specification. However, Applicant's specification does not mention the term "tangible".

As per Applicant's argument that Copperman's invention is not equivalent to Appicant's invention, the Examiner respectfully disagrees. The argument is irrelevant. The Examiner believes that given the broadest reasonable interpretation of Applicant's claims, Copperman clearly anticipates them.

As per Applicant's argument that Copperman does not disclose the limitations *"converting, by a computing device, unstructured service requests to one or more structured answer objects, each unstructured service request including information to narrow product problem symptom(s) to a root cause, each structured answer object comprising hierarchically structured historic problem diagnosis data; and in view of the*

product problem symptom(s): identifying a set of the one or more structured answer data objects, each structured answer data object in the set comprising term(s) and/or phrase(s) related to the product problem symptom(s); and providing historic and hierarchically structured problem diagnosis data from the set to an end-user for product problem diagnosis" as in claim 31, the Examiner respectfully disagrees in part. The additional limitations with respect to "product problem symptom(s)" and "root cause" have been rejected in view of Fratkina. The remaining limitations have been rejected by Copperman. The Examiner has clarified the rejections above and believes that a *prima facie* case of anticipation has been made.

As per Applicant's argument that Copperman does not disclose the limitations *"communicating, by a troubleshooting wizard, a search request to a server computing device, the troubleshooting wizard allows a user to systematically present and leverage hierarchically structured historical product problem diagnosis data from structured answer data objects in view of a product problem description, the search request comprising the product problem description; and responsive to receiving a response to the search request, presenting, by the troubleshooting wizard, information from the response to the user, the information comprises the hierarchically structured historic problem diagnosis data, the historic problem diagnosis data being associated with term(s) and/or phrase(s) related to the product problem description"* as in claim 39, the Examiner respectfully disagrees in part. The additional limitations with respect to the "troubleshooting wizard" have been rejected in view of Fratkina. The remaining

limitations have been rejected by Copperman. The Examiner has clarified the rejections above and believes that a *prima facie* case of anticipation has been made.

As per Applicant's argument that Copperman does not disclose the limitations *"a product problem description data field; a product problem cause data field; a product problem resolution data field; and wherein the product problem description data field is a parent node of the product problem cause data field"* as in claim 29, the Examiner respectfully disagrees. The Examiner has clarified the rejections above and believes that a *prima facie* case of anticipation has been made.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Aaron Sanders whose telephone number is 571-270-1016. The Examiner can normally be reached on M-Th 8:00a-5:00p.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Tim Vo can be reached on 571-272-3642. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/AJS/
Aaron J. Sanders
Examiner
7 September 2007

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